110.1 - Foods and Beverages (liquid and powder forms)

These SRMs are for validation of analytical procedures and calibration of apparatus used in the analysis of trace elements and other analytes in foods and related products.

Technical Contact for SRMs: 1570a and 1577b rolf.zeisler@nist.gov Technical Contact for SRMs: 1549, 1566b, 1568a, 2384, 2385 and 3276 katherine.sharpless@nist.gov

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SRM Description	1549	1566b	1567a	1568a	1570a Trace	1577c	1953 Organic	1954	2384	2385	3276	3278
Unit of Issue	Non-Fat Milk Powder (100 g)	Oyster Tissue (25 g)	Wheat Flour (80 g)	Rice Flour (80 g)	Elements in Spinach Leaves (60 g)	Bovine Liver (20 g)	Contaminants in Non-Fortified Human Milk (5 vials x 5 mL)	Organic Contaminants in Fortified Human Milk (5 vials x 5 mL)		•	Carrot Extract in Oil (5 ampoules)	Tocopherols in Edible Oils (5 x 1 mL)
	Ele	ement (Co	ncentratio	ns are in i	mg/kg, unle	ss noted b	y a single asteris	k for mass fraction	on, in %)			
Aluminum	(2)	197.2	5.7	4.4	310							
Antimony	(0.00027)	(0.011)		(0.0005)		(0.00313)						
Arsenic	(0.0019)	7.65	(0.006)	0.29	0.068	0.0196						
Barium	, ,	(8.6)	, ,									
Bromine	(12)	. ,	(6)	(8)								
Boron	()	(4.5)	(-)	(-)	37.6							
Cadmium	0.0005	2.48	0.026	0.022	2.89	0.0970						
Calcium	1.30*	0.0838*	0.0191*	0.011*		131	(257)	(257)	840	624		
Cesium	1.00	0.0000	0.0101	0.011		(0.0217)	(207)	(201)	0-10	024		
Chlorine	1.09*	0.514*	(565)	(300)		(0.287*)						
Chromium	0.0026	0.514	(505)	(500)		0.300						
Cobalt		0.271	(0.006)	(0.019)		0.300						
	(0.0041)	0.371	(0.006)	(0.018)		275.2	(0.268)	(0.260)	22.2	0.9		
Copper Fluorine	0.7 (0.20)	71.6	2.1	2.4		275.2	(0.268)	(0.268)	23.2	0.9		
SRM Description	1549 Non-Fat	1566b	1567a	1568a	1570a Trace Elements in	1577c	1953 Organic Contaminants in	1954 Organic Contaminants	2384	2385	3276	3278
	Milk Powder	Oyster Tissue	Wheat Flour	Rice Flour	Spinach Leaves	Bovine Liver	Non-Fortified Human Milk	in Fortified Human Milk	Baking Chocolate	Slurried Spinach	Carrot Extract in Oil	Tocopherols in Edible Oils
Unit of Issue	(100 g)	(25 g)	(80 g)	(80 g)	(60 g)	(20 g)	(5 vials x 5 mL)	(5 vials x 5 mL)				(5 x 1 mL)
	Ele	ement (Co	ncentratio	ns are in	mg/kg, unle	ss noted b	y a single asteris	k for mass fraction	on, in %)			
lodine	3.38		(0.0009)	(0.009)								
Iron	1.78	205.8	14.1	7.4		197.94	(0.194)	(0.194)	132	17		
Hydrogen		(7.2)				7.35*	,	· · /				
Lead	0.019	0.038	(< 0.020)	(< 0.010)	(0.20)	0.0628						
Lithium						(12)						
Magnesium	0.120*	0.1085*	0.040*	0.056*		620	(32.4)	(32.4)	2570	368		
Manganese	0.26	18.5	9.4	20.0	75.9	10.46	(0.040)	(0.040)	20.3	3.8		
Mercury	0.0003	0.0371	(0.0005)	0.0058	0.030	(0.00536)	(0.000101)	(0.000101)				
Molybdenum	(0.34)		0.48	1.46		3.30						
Nickel	()	1.04		(0.16)	2.14	0.0445						
Nitrogen		(7.6)*		/	(6.06)*	(10.30*)						
Phosphorus	1.06*	,	0.134*	0.153*	,	(1.175*)	(135)	(135)	3330	323.7		
Potassium	1.69*	0.652*	0.133*	0.1280*		1.023*	(462)	(462)	8200	3650		
Rubidium	(11)	3.262	0.68	6.14		(35.3)	(.32)	(-5=)				
	(' ' ')		0.00	5.17		(55.0)						
Selenium	0.11	2.06	1.1	0.38	0.117	2.031						

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SRM	1549	1566b	1567a	1568a	1570a	1577c	1953	1954	2384	2385	3276	3278
Description	Non-Fat Milk	Oyster	Wheat	Rice	Trace Elements in Spinach	Bovine	Organic Contaminants in Non-Fortified	Organic Contaminants in Fortified	Baking	Slurried	Carrot	Tocopherols
Unit of Issue	Powder (100 g)	Tissue (25 g)	Flour (80 g)	Flour (80 g)	Leaves (60 g)	Liver (20 g)	Human Milk (5 vials x 5 mL)	Human Milk (5 vials x 5 mL)	(5 X 91 g)	•	Extract in Oil (5 ampoules)	(5 x 1 mL)
	Ele	ement (Co	ncentratio	ns are in	mg/kg, unle	ss noted b	y a single asteris	k for mass fraction	on, in %)			
Silicon	((6)						
Silver	(< 0.0003)	0.666				0.0059						
Sodium	0.497*	0.3297*	6.1	6.6		0.2033*	(127)	(127)	40	47		
Strontium		(6.8)			55.6	0.0953						
Sulfur	0.351*	0.6887*	0.165*	0.120*	(0.46)*	0.749*						
Tellurium				(< 0.002)								
Thorium		0.0367		0.002)	0.048							
Tin	(< 0.02)	(0.031)		(0.0033)	0.0.0	(0.0047)						
Uranium	(0.02)	(0.2550)	(0.0003)	(0.0003)	(0.155)	(0.0011)						
Vanadium		0.577	(0.011)	(0.007)	0.57	0.00817						
Zinc	46.1	1424	11.6	19.4	82	0.00011			36.6	8.4		
Carotenoids and Tocopherols(Concentrations in mass fraction in ug/g												
total cis-ß-Carotene											(13.9)	
total ß-Carotene											(35.5)	
a-Tocopherol												290.1
SRM	1549	1566b	1567a	1568a	1570a	1577c	1953	1954	2384	2385	3276	3278
Description					Trace Elements		Organic Contaminants	Organic				
	Non-Fat Milk Powder	Oyster Tissue	Wheat Flour	Rice Flour	in Spinach Leaves	Bovine Liver	in Non-Fortified Human Milk	Contaminants in Fortified Human Milk	Baking Chocolate	Slurried Spinach	Carrot Extract in Oil	Tocopherols in Edible Oils
Unit of Issue	(100 g)	(25 g)	(80 g)	(80 g)	(60 g)	(20 g)	(5 vials x 5 mL)	(5 vials x 5 mL)	(5 X 91 g)	(4x70 g)	(5 ampoules)	(5 x 1 mL)
	Ele	ement (Co	ncentratio	ns are in I	mg/kg, unle	ss noted b	oy a single asteris	k for mass fraction	on, in %)			
ß-Tocopherol												11.38
y-Tocopherol											443	111.5
8-Tocopherol											373	28.8
trans-a-Carotene											(3.14)	
trans-ß-Carotene Selected Fatty Acids (as Triglycerides) (Concentrations expressed in mass fraction %)											(21.4)	
Hexadecanoic Acid (C16:0)(Palmitic Acid)											1.36	
(Z)-9-Hexadecenoic Acid (C16:1 n-7)(Palmitoleic Acid)											0.0147	

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Heptadecanoic Acid (C17:0)											0.0213	
Octadecanoic Acid (C18:0)(Stearic Acid)											1.14	
(Z)-9-Octadecenoic Acid(C18:1 n-9)											3.68	
(Z)-11-Octadecenoic Acid (C18:1 n-7)(Vaccenic Acid)											0.519	
(Z,Z)-9,12-Octadecenoic Acid (C18:2 n-6)(Linoleic Acid)											6.64	
(Z,Z,Z)-9,12,15-Octadecatrienoic Acid (C18:3 n-3)(Linolenic Acid)											0.816	
Eicosanoic Acid (C20:1)(Arachidic Acid)											0.0578	
SRM	1549	1566b	1567a	1568a	1570a	1577c	1953	1954	2384	2385	3276	3278
Description	Non-Fat Milk Powder	Oyster Tissue	Wheat Flour	Rice Flour	Trace Elements in Spinach Leaves	Bovine Liver	Organic Contaminants in Non-Fortified Human Milk	Organic Contaminants in Fortified Human Milk	Baking Chocolate	Slurried Spinach	Carrot Extract in Oil	Tocopherols in Edible Oils
Unit of Issue	(100 g)	(25 g)	(80 g)	(80 g)	(60 g)	(20 g)	(5 vials x 5 mL)	(5 vials x 5 mL)	(5 X 91 g)	(4x70 g)	(5 ampoules)	(5 x 1 mL)
	Ele	ement (Co	ncentratio	ns are in	mg/kg, unle	ss noted b	y a single asteris	k for mass fraction	on, in %)			
(Z)-11-Eicosenoic Acid (C20:1 n-9)(Gondoic Acid)											0.353	
Docosanoic Acid (C22:0)(Behenic Acid)											0.126	
Tetracosanoic Acid (C24:0)(Lignoceric Acid)											0.0242	